

An Investor Brief on Impacts
that Drive Business Risks:

SUGARCANE

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Ceres

This brief provides a summary of the main environmental and social factors that affect sugarcane production *worldwide*; however, it spotlights key players in the U.S. value chain, and provides examples of actions being taken by companies operating or headquartered in the U.S.

KEY TAKEAWAYS

- Sugarcane production has steadily increased over the past several decades, doubling over the last 20 years in line with growing consumption of sweetened processed foods and drinks, and its use as a feedstock for producing ethanol.
- Producing sugarcane places significant pressure on water supplies and leads to water pollution that impacts biodiversity and the functioning of healthy ecosystems.
- The use of forced labor and child labor along with other human rights challenges in many sugarcane-producing countries present a business risk.
- Investors should address business risks in the sugarcane supply chain through direct engagement with their portfolio companies and by supporting relevant policies and multi-stakeholder collaborations.

COMMODITY OVERVIEW

Globally, About Three Quarters of Sugar Production is Used in Food; the Remainder is Used for Biofuels or in Industrial Products¹

Sugar is a globally important commodity used as a sweetener and also for biofuel. It is extracted from sugarcane and sugar beet.

Globally, [sugarcane is used for about 80 percent of sugar produced](#); [sugar beets account for the remaining 20 percent](#).

Once sugarcane has been refined, it is packaged and sold as table sugar through retailers, or sold to companies for use in processed foods and beverages.

This brief is only focused on issues related to *sugarcane* production.

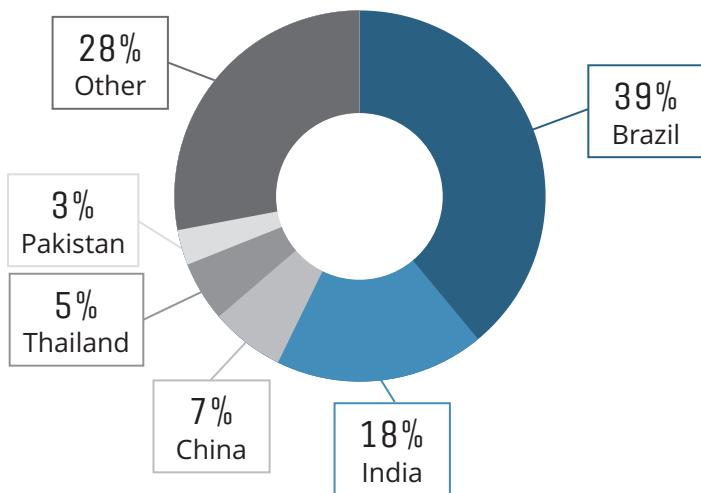


GLOBAL PRODUCTION DATA

Brazil & India Together Account for About 60 Percent of Global Sugarcane Production

Sugarcane is produced in over 100 countries, mostly in developing nations in tropical regions of the world.²

TOP FIVE PRODUCTION REGIONS³



1,899 MILLION METRIC TONS

Average global sugarcane production, 2011-2013⁴

\$88 BILLION

Global production value⁵

20 PERCENT

Proportion of global production exported (of raw cane and beet sugar)⁶

Rising Consumption of Processed Foods and Demand for Biofuel Drive Demand

Global production of sugarcane doubled over the last two decades.⁷ Demand for sugar is expected to continue rising in line with a growing population and rising incomes which favor sweetened foods, as well as ongoing demand for sugarcane as a feedstock to produce biofuels.⁸

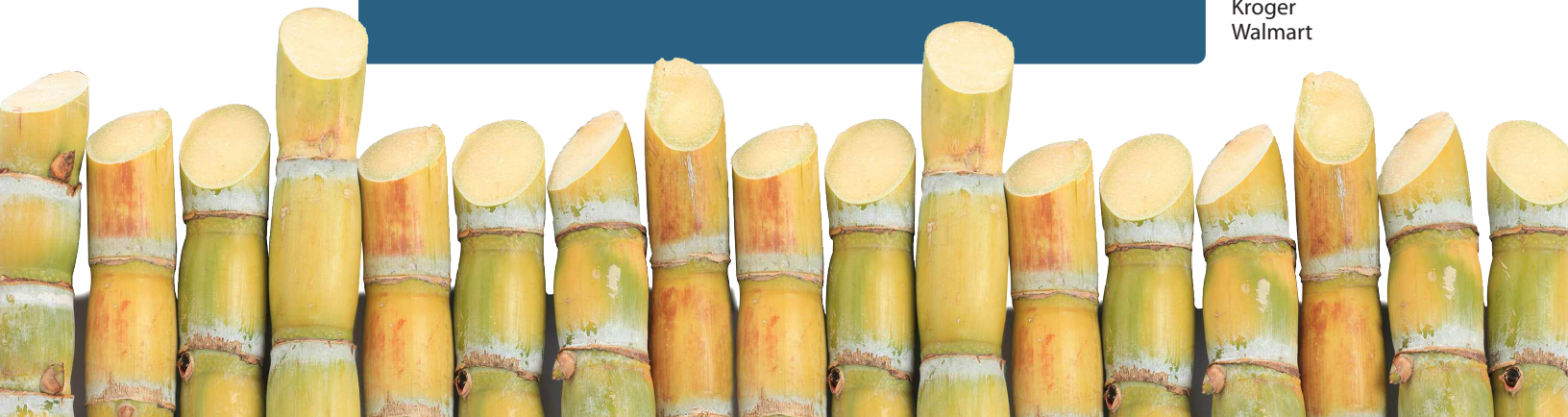
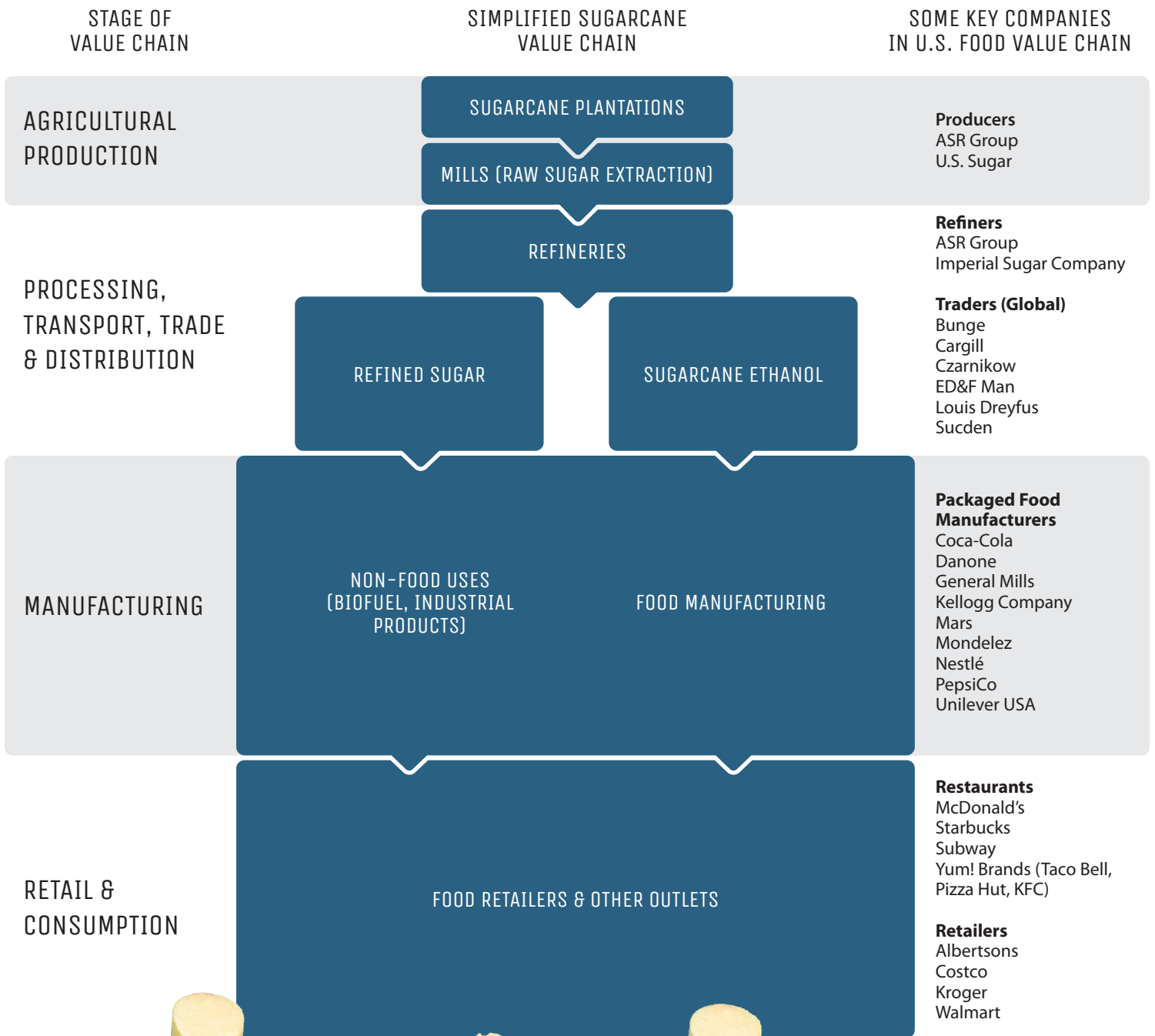
U.S. SPOTLIGHT

The United States produces sugar from both sugarcane and sugar beets. Sugarcane accounts for about 45 percent of sugar produced domestically, and sugar beets for about 55 percent.⁹ The large majority of sugarcane (90 percent) is produced in Florida and Louisiana with the remainder grown in Hawaii and Texas; sugar beets are grown in states with temperate climatic conditions (e.g., in the Upper and Central Great Plains).¹⁰ The large majority of sugar consumed in the U.S. is produced domestically.¹¹



THE SUGARCANE VALUE CHAIN

The Sugarcane Market is Highly Concentrated
with a Small Number of Players Controlling Refining and Merchandising



KEY PLAYERS

The following provides additional information about some of the companies in the U.S. sugarcane food value chain. While the focus is on publicly traded companies headquartered in the U.S., some of the companies mentioned are headquartered outside the U.S. and/or are privately held.

PRODUCERS

Two of the largest growers of sugarcane in the U.S. are U.S. Sugar (privately held) and ASR Group (privately held).¹²

REFINERS AND TRADERS

In the U.S., ASR Group and The Imperial Sugar Company (ISC) dominate sugarcane refining and merchandising. ASR Group is the largest vertically integrated cane sugar refiner in the world and owns five refineries in the U.S. Its brands of packaged table sugar include Domino Sugar, C&H Sugar and Florida Crystals.¹³ ISC, which is owned by Louis Dreyfus, is also among the largest cane sugar refiners globally; in the U.S., it owns three refineries.¹⁴

Globally, six firms control two-thirds of the trade in both raw and refined sugar. Sugar is purchased from production areas to sell to refiners, with refined sugar bought from refineries to sell to sugar-using companies for processed foods and beverages. Two of the six firms are based in the U.S.: Bunge and Cargill (privately held); the other four are headquartered in Europe: Czarnikow, ED&F Man, Louis Dreyfus and Sucden.¹⁵

MANUFACTURERS

The baking and confectionery industries are heavy users of sugar. Other significant users in the U.S. are cereal and increasingly beverage manufacturers.¹⁶ Important global buyers of sugar that are headquartered in the U.S. or with significant U.S. operations include:

- Coca-Cola
- Danone
- General Mills
- Kellogg Company
- Mars
- Mondelez International
- Nestlé
- PepsiCo
- Unilever¹⁷

RESTAURANTS AND RETAILERS

Restaurants and retailers play an important role in the sugar supply chain. These companies can indirectly influence production practices and supplier standards within their supply chain. Moreover, they are sensitive to external pressures as well as responsive to market trends and consumer preferences.

Restaurants are heavy users of products containing sugar as a sweetener (such as bakery items). Packaged table sugar is also distributed through restaurants as well as retailers. The four largest quick-service and fast-casual restaurants in the U.S. are McDonald's, Yum! Brands (Taco Bell, Pizza Hut, KFC), Starbucks and Subway. All are headquartered in the U.S.¹⁸ In terms of food retailers, the four largest in the U.S. are Walmart, Kroger, Costco and Albertsons.¹⁹



ENVIRONMENTAL AND SOCIAL FACTORS

WATER USE
& POLLUTIONWORKING
CONDITIONSCLIMATE
CHANGELAND USE &
BIODIVERSITY

LAND RIGHTS



LIVELIHOODS



DEFORESTATION



High Impact



Medium Impact



Low Impact

Globally, the environmental and social impacts linked to sugarcane production include air pollution associated with burning, water use and pollution, land rights and working conditions. Though the refining of sugarcane is not a focus of this brief, it also contributes to some of these impacts, in particular inefficient water use and water pollution from wastewater effluent.

REGIONAL CONTEXT MATTERS

Much of the sugar used in the U.S. is grown and refined domestically where the social and environmental impacts are less significant than sugar produced in other countries. The majority of U.S. sugarcane production is mechanically harvested green cane, which decreases both labor needs and cane burning before harvest.

However, many U.S. companies operate globally and may sell products made with sugarcane that is produced where certain issues (e.g., the use of forced labor and poor water management practices) are a more significant concern.

1. HARVESTING PRACTICES GENERATE AIR POLLUTION AND GREENHOUSE GAS EMISSIONS

Greenhouse gas emissions along with air pollution are created when sugarcane fields are burned before manual harvesting of sugarcane. This is commonplace in many countries where the harvest is not mechanized. A study of Brazilian sugarcane production found the associated burning of residues to be the largest contributor of greenhouse gas emissions (44 percent) followed by the use of synthetic fertilizers (22 percent).²⁰

2. WATER USE CONTRIBUTES TO OVER WITHDRAWAL FROM AQUIFERS AND SURFACE WATER

Sugarcane's water requirements are generally high although the demand for water supplied by irrigation varies greatly around the world. For example, in Brazil, many sugarcane plantations are rainfed.²¹ In other regions where sugarcane production relies on irrigation, unsustainable water use can strain aquifers and the environmental flows of rivers. This is particularly relevant in South Asia (India and Pakistan), Australia and Africa.²² Around the world, approximately 30 percent of sugarcane production is grown in regions of high or extremely high water stress (e.g., in Australia and India) meaning regions where existing water supplies face intense competition, and in some cases growing regulation.²³ Limited availability of water can be a major constraint that affects production.²⁴

It Takes
1,671 LITERS OF WATER

To Produce
1 KG SUGAR
(Weighted Global Average)^{25,26}

31 PERCENT
Percentage of Production
in Regions of Water Stress²⁷

54 PERCENT
Percentage of Global Production Irrigated²⁸

3. POOR MANAGEMENT PRACTICES ERODE SOIL, POLLUTE WATER AND AFFECT BIODIVERSITY

Excessive application of fertilizer combined with poor irrigation practices can lead to nutrient pollution and algal blooms that deprive water of oxygen and are a growing concern around the world. Moreover, where flooding is common, exposed topsoil easily washes off with silt, which also pollutes water sources. The overuse of agrochemicals and poor soil management practices that produce runoff has negatively impacted several globally unique marine reef systems (e.g., the Great Barrier Reef in Australia, the Mesoamerican Reef in Central America and the Great Sea Reef in Fiji).²⁹

4. EXPLOITATION OF WORKERS, ALONG WITH USE OF FORCED AND CHILD LABOR, RESULTS IN CONSUMER CONCERN AND LEGAL AND REPUTATIONAL RISKS

Sugarcane production is associated with poor adherence to the International Labour Organization's (ILO) core labor principles. The U.S. Department of Labor has identified 17 sugarcane producing countries with high risks for child and/or forced labor,³⁰ including three of the five largest producers of sugarcane: Brazil, India and Thailand.³¹

Other human rights challenges include inadequate compensation, restricted rights to associate and lack of contracts for laborers. Poor living and working conditions affect some agricultural workers and can include the following: a lack of fair wages, lack of protective equipment, lack of water and nutrition, lack of first aid equipment, insufficient protection from use of agrochemicals, gender discrimination and limited access to health care and education.³² One example of the impacts includes recent reports of working conditions among some sugarcane cutters in hot temperatures linked to an unusually high incidence of deadly kidney failure.³³

Occupational safety and health hazards arise from hand harvesting of sugarcane with sharp tools like machetes; the monotony of the work combined with long hours working in hot sun lead to frequent accidents.³⁴ In addition, pre- and post-harvest burning can result in smoke inhalation and respiratory concerns for workers while also generating air pollution in the neighboring communities.³⁵

Companies, governments and civil society organizations have been actively addressing working conditions, though concerns remain high. For example, a 2004 report by Human Rights Watch reported that sugar purchased by The Coca-Cola Company in El Salvador was harvested with child labor. As a result, over the last dozen years, The Coca-Cola Company has been collaborating with multiple stakeholders to eliminate child labor (ILO-IPEC, local foundations, international NGOs and the government). The efforts have resulted in a measurable reduction in the incidence of child labor in sugarcane harvesting, though they have not yet eliminated it.³⁶



5. COMPETITION FOR LAND EXPLOITS COMMUNITIES AND WORKERS

Since 2000, an estimated 4 million hectares of land have been acquired for sugar production.³⁷ In regions with unclear, or unenforced property rights, small-scale producers and local communities are often displaced by these acquisitions, and lose their livelihoods as well as access to water and other ecosystem services on which they relied. Cambodia, Laos, parts of Latin America and

parts of Southern Africa have been the focus of potential land tenure conflicts and possible human rights challenges.³⁸ Sugarcane expansion in Brazil, the world's largest producer of sugarcane, has been linked to disputes with indigenous people fighting to reclaim their ancestral lands.³⁹ Cane cultivation more than tripled there between 2007 and 2012, rising from 180,000 to 570,000 hectares.

6. SMALL-SCALE FARMERS AND WORKERS LACK OF ACCESS TO RESOURCES LIMITS THEIR PRODUCTIVITY AND LIVELIHOODS

Millions of small-scale farmers and plantation workers in developing countries are involved in producing sugarcane. Therefore, their involvement in efforts to address impacts is crucial to driving change in sugarcane production. In countries like Pakistan and the Philippines, farms of five or fewer hectares represent a significant proportion of producers. By comparison, in Brazil the majority of farms are larger, ranging from 20 hectares to 500 hectares.⁴⁰

Smallholders often face significant challenges accessing markets and may require additional technical and financial resources to support productivity improvements, shifting

cultivation practices and/or record keeping. The price smallholder farmers receive for cane can fail to cover the costs they incur to produce it, leaving them in a debt trap and with little capital to reinvest in farms. Increasing investment in smallholder farmers would help increase productivity to meet increasing demand while also breaking the cycle of poverty. As one example, in Belize, investments in quality improvement programs and integrated pest management boosted productivity by 21 percent, resulting in a 30 per cent increase in farmers' cane revenue.⁴¹



OPPORTUNITIES FOR ACTION

Investors can encourage companies to take the following actions to reduce business risks

1. JOIN MULTI-STAKEHOLDER SUSTAINABILITY EFFORTS

Many players, including buyers, producers, governments, NGOs and communities understand the issues and are collaborating to ensure the long-term sustainability of sugarcane production. Investors should encourage companies to join these multi-stakeholder efforts to demonstrate commitment and help accelerate progress. When a company is already involved in such efforts, investors should encourage constructive participation and progress in meeting commitments.

This includes supporting and actively participating in the development and use of sustainability standards (see section 4). It also includes supporting efforts such as a multi-stakeholder partnership developed among the Brazilian Sugarcane Industry Association (UNICA), cane cutter's labor union, NGO Solidaridad and companies such as Syngenta and John Deere. Since its establishment in 2009, this effort has retrained thousands of manual sugarcane cutters that were made redundant as a result of a move to mechanized harvesting (which was partly motivated by the environmental benefits from eliminating burning during harvesting).⁴²

2. ENGAGE DIRECTLY WITH PRODUCERS

Where companies have visibility into their supply chains, they can work with their suppliers and supporting industries (e.g., farm equipment, soil amendment or irrigation companies) to promote better management practices. For example, in 2014, Unilever partnered with the NGO

Solidaridad in India to pool public and private grants, credits and investments to promote water efficiency techniques and education among sugarcane farmers (as well as cotton, soy and tea farmers) with the goal of saving 400 billion to one trillion liters of water in three years.⁴³

3. SUPPORT GOVERNMENT POLICIES

Companies can support sustainability policies in producer countries, whether at the national or local level. In the U.S. for example, sugarcane growers in Florida (along with other stakeholders) have been working for 20 years to reduce the nutrients in water entering the Everglades. As a result, the amount of phosphorus leaving farms has been reduced significantly over that timeframe, exceeding the annual reduction targets required by law.⁴⁴

4. ENCOURAGE USE AND DEVELOPMENT OF SUSTAINABILITY STANDARDS

Four major international third-party standards apply to sugarcane production: Bonsucro, Fairtrade, Rainforest Alliance and the Organic Standard.⁴⁵ Also, the International Sustainability and Carbon Certification (ISCC) and the Roundtable on Sustainable Biomaterials (RSB)⁴⁶ cover sugarcane as a biofuel feedstock.

Ceres has not evaluated the robustness and effectiveness of these standards but is providing them as options to consider. Ideally, standards are comprehensive and focus on measuring improvements across environmental and social issues.

COMPANIES IN ACTION

- **The Coca-Cola Company (TCCC)** has set a systemwide goal to sustainably source 100 percent of its sugarcane by 2020, with Bonsucro certification as its preferred method. Fifteen of the company's top bottlers (representing about 85 of the TCCC system's sugar purchases) have also committed to their own plans to reach this target.⁴⁷ As of late 2016, approximately 20 percent of the company's sugar (about 1 million tons) was sustainably sourced. The company also committed to zero tolerance for land grabbing and has been conducting studies on land rights, child labor and forced labor practices in several important sugarcane producing countries.
- **General Mills** has committed to source 100 percent of its sugarcane by 2020 from responsible and sustainable regions that are in compliance with Bonsucro or comparable standards. It will independently verify any high-impact countries. In its 2015 fiscal year, 59 percent of the sugarcane the company purchases was sustainability sourced.⁴⁸
- **PepsiCo** has committed to 100 percent sustainable sourcing of sugarcane by 2020, which will be achieved by gaining Bonsucro certification and implementing related sourcing plans. In 2015, the company assessed mills and farms, engaged local representatives and strengthened its audit questions.⁴⁹



ADDITIONAL RESOURCES

- The U.S. Department of Agriculture conducts research on multiple commodities, including sugarcane. This includes data on production and consumption, prices and trade and is published through the Economic Research Service, Foreign Agricultural Service and National Agricultural Statistics Service.
- Both [The Sustainability Consortium](#) and [World Wildlife Fund](#) offer high-level insights and analysis about potential risks and opportunities across a number of commodities, including sugarcane.
- [Bittersweet: Sustainability issues in the sugar cane \(sic\) supply chain](#) (2015), by Stichting Onderzoek Multinationale Ondernemingen (SOMO), provides an overview of different sustainability issues in the production of sugarcane globally. Based on new field research the report expands on working conditions and land conflict specifically in Malawi's sugar industry. It also discusses international trade and governance, identifies important corporate actors, and analyses supply chain policies of leading Dutch retailers.
- [Sugar Rush: Land rights and the supply chains of the biggest food and beverage companies](#) (2013), by Oxfam, analyzes how sugarcane has been driving large-scale land acquisitions and land conflicts and impacting small-scale food producers and their families.
- [Respecting Land and Forest Rights: A Guide for Companies](#) (2015) by The Interlaken Group and the Rights and Resources Initiative (RRI) was developed through a multi-stakeholder forum to support companies in respecting land rights by aligning operations with the United Nations Food and Agriculture Organization's Voluntary Guidelines on the Responsible Governance of Tenure (VGGT).
- [KnowTheChain](#) is a resource for businesses and investors who need to understand and address forced labor risks within their supply chains.

[Engage the Chain](#) offers briefs on seven other key commodities, a compelling [case](#) for sustainable agriculture and opportunities for action that cut across all types of agricultural commodities.

ENDNOTES

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- 30 *Note: The following definitions are drawn from the International Labor Organization (ILO). Forced labor refers to egregious forms of mistreatment that result in workers being trapped in jobs they did not enter voluntarily and cannot leave without threat or penalty. Human trafficking is a common form of forced labor that affects migrant workers. The term refers to the movement of workers across internal or international borders for the purpose of exploitation.*

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- 45 Note: Organic standards are developed at the national and/or regional level through relevant organic standard setting bodies
- 46 The following reports provide useful information about the different standards related to sugarcane production.
- *The State of Sustainability Initiatives Review* (2014) published by IISD reports on system-level and market trends across 16 of the most important standards initiatives operating across 10 key commodity sectors.
 - *Selecting a Biomass Certification System—a Benchmark on Level of Assurance, Costs, and Benefits* (2012), commissioned by the Netherlands Ministry of Economic Affairs, Agriculture, and Innovation, compares different standards and certification options.

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